

机器学习与数据挖掘

基于距离向量的改进WSN路由算法

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摘要:

针对无线传感器网络多对一的路由特点和LEACH(low-energy adaptive clustering hierarchy, LEACH)协议簇建立阶段的信息交换特性,提出了一种基于距离向量的改进路由算法。该算法不再从邻居节点开始初始化路由表,也不需要建立网络中任意两点之间的路由路径,在簇的建立阶段,通过簇首信息的广播,各簇首获得其他簇首的一些信息,这可以用来简化协议,从而降低了协议实现所需的能耗。在J-sim仿真平台上对算法进行了仿真研究。仿真结果表明本研究提出的改进路由算法能够显著延长网络的生命周期,并使死亡节点的分布更均匀;在考虑电路损耗、CUP损耗和状态转换等方面的能耗后,该算法仍具有改善无线传感器网络性能、延长网络生命周期的潜能。

关键词: 无线传感器网络 路由算法 J-sim仿真平台 LEACH协议

The improvement of wireless sensor networks routing algorithm based on the distance vector simulation

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Abstract:

For many-to-one wireless sensor network routing features and the LEACH protocol to establish the stage of information exchange characteristics, an improved routing algorithm based on the distance vector was proposed. The proposed algorithm could initialize the routing table no longer from the neighbors and did not need to build the routing path between any two points of the network. In the establishment phase of the cluster, each cluster could obtain the first cluster head information by the cluster head information broadcast, which could be used to simplify the protocol, and thereby reduce the agreement to achieve the required energy consumption in the J-sim simulation platform to achieve the above-mentioned system algorithm and its simulation study. Simulation results showed that the improved routing algorithm could significantly prolong the network life cycle, and the death of nodes was more evenly distributed. Considering the circuit loss, the CUP loss and state transitions and other aspects of energy consumption, this algorithm could also improve wireless sensor network performance, and extend the potential of the network lifecycle.

Keywords: wireless sensor networks routing algorithm J-sim simulation platform LEACH protocol

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